

Serial No.: 09/993,991
 Moore et al.
 Case No.: CE08644R

REMARKS

Reconsideration of the above-referenced application is respectively requested in view of these remarks. Claims 1-15 are currently pending.

REAL PARTY IN INTEREST

The present application is wholly assigned to Motorola, Inc., a Delaware corporation with its headquarters in Schaumburg, Illinois.

STATUS OF THE CLAIMS

Applicant originally filed claims of the present application on November 14, 2001. According to the Office Action dated February 25, 2005, claims 1-5 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. In addition, claims 1, 4-6, and 9-15 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,101,327 to Holte-Rost et al., and claims 2, 3, 7 and 8 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Holte-Rost in view of United States Patent No. 5,666,293 to Metz et al. Applicant responded in a communication mailed July 19, 2005 by amending claims 1-3, 6-8, 11 and 14-15. According to the Final Office Action dated October 12, 2005, the rejection under Section 112, second paragraph, was withdrawn. Claims 1, 4-6, and 9-15 under 35 U.S.C. § 103(a) as being unpatentable over Holte-Rost et al., and claims 2, 3, 7 and 8 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Holte-Rost in view of Metz. This rejection was made final. Applicant's response to the October 12, 2005 Final Office Action is hereby submitted.

STATUS OF THE AMENDMENTS

Pursuant to Applicant's amendments made on July 19, 2005, claims 1-15 are currently pending. No amendments are made in this Response.

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SUMMARY OF THE INVENTION

Applicants' invention relates to a method and apparatus for stabilizing calls during a system upgrade or downgrade. The method generally involves the use of a control block which contains the version number of the application operating on both a primary and secondary controller. The primary controller writes state data to its control block, a checkpointing service replicates the data to the control block of the secondary controller, wherein the secondary controller is capable of reading the saved state data to assume processing control if necessary. If the secondary controller assumes system control and is operating on a different application version, the control block may coordinate appropriate version format conversions. The method of the present invention may be implemented, for example, by a stabilization system. The system may include a primary controller and secondary controller. Each of the primary and secondary controllers is coupled via a checkpointing service.

During normal operations, the primary controller and the secondary controller are configured to operate the same version of the application software. During such operations the primary controller writes stable and transient data to its local database. When the primary controller reaches a steady state the stable data is written to the replica state database within the control block. The checkpoint service is notified that the state data is available for transfer to the secondary controller and replicates the state data and stores it in the replica state database. In the event of a fault or failure in the primary controller, the system shuts down the primary controller to ensure the controller has the opportunity to update the replica state database and, via the checkpoint service, the replica state database. Upon shutdown of the primary controller, the secondary controller assumes processing control of the system. The secondary controller reads the replica state database, rebuilds its local database, and is therefore able to take control with little or no interruption of wireless service.

An upgrade or downgrade of service generally entails the installation of new application software or hardware on the secondary controller. After the secondary controller has its software upgraded or downgraded, the secondary controller prepares to assume control of the system and notifies the secondary control block version table of the new application version number. Then, the checkpoint service communicates with the

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primary control block and updates the control block version table to indicate the new secondary application version. The primary controller then shuts down or quiesces. With the secondary controller ready to assume control of the system after the shut down of the primary controller, the primary processor compares versions of the primary application and secondary application to determine if the change in the secondary application was an upgrade, a downgrade or no change. If the new version is a downgrade, the saved state data is converted to a format compatible to the older application version running, the converted data is rewritten to the replica state database, the checkpointing service is notified and the replica state database is updated. If it is determined that the new version is an upgrade or no change, conversion of the state data may be delayed. The secondary controller takes over primary control of the system and opens the checkpoint replica database for read and write access. Next, the system determines if the replica state data needs to be converted, when the new application is an upgrade, and the replica state data is converted to the new version format.

GROUND OF THE REJECTIONS TO BE REVIEWED

Claims 1, 4-6, and 9-15 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. patent No. 6,101,327 to Holte-Rost et al. Claims 2, 3, 7 and 8 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Holte-Rost in view of United States Patent No. 5, 666, 293 to Metz et al.

ARGUMENTS

In the Office Action, claims 8, 14 and 15 were objected to for containing minor typographical errors. Applicants have amended these claims in accordance with the Examiner's helpful comments. Applicants respectfully contend that the claims are now in the correct format.

The Office Action rejects claims 1, 4-6, and 9-15 under 35 U.S.C. § 103(a) as being unpatentable over U.S. patent No. 6,101,327 to Holte-Rost et al. It is stated that Holte-Rost disclose the elements of independent claims 1, 6, 11, 14 and 15 except that they do not specifically disclose the "first format" and the "second format" but that it

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would be obvious to one of ordinary skill in the art to understand that the disclosed resource object was storing a state in a "first format" and after the transfer of the resource object the state was held in a "second format." In addition, it is stated that it would be obvious in view of Holte-Rost to convert the saved state data in a first format of the state data to a second format of the state data, wherein the second format of the state data is compatible with the upgraded second version of a control application.

With respect to claims 1, 4-5 and 11-14, Applicants claim that the upgraded second version of software runs after the primary processor has quiesced. In this way, only one version of software is running at time. On the other hand, Holte-Rost teach that the old release and the new release of software are active and running at the same time. Moreover, Holte-Rost says "With the method according to the present invention a new version of software will co-exist with the old version of software during upgrading. In this way, it is possible to test new software with test traffic, while the normal traffic runs on the old version of software." Column 6, lines 8-12. This is directly contrary to the present invention as found in claims 1, 4-5 and 11-14.

It is stated in the Office Action in response to Applicants' argument about the upgraded second version of software runs after the primary controller has quiesced is not persuasive because the primary controller attempts to "gracefully shutdown." The Examiner interprets this language from the specification to mean that the second controller begins a continuation of the execution while the first controller is still operating. Applicant respectfully traverses this argument. According to the language of the claims, the second controller does not operate the upgraded version of the control application until after the quiescing of the primary controller. In other words, quiescence is completed when the second controller begins to operate. This is supported by the Specification when it is stated that "Upon shutdown of the primary controller 52, the secondary controller 54 assumes processing control of the system 50." See page 9, lines 1-2. Thus, it is clear that the second control does not assume processing control until the primary controller is shut down. In addition, quiescent is defined by *Merriam Webster's Collegiate Dictionary, Tenth Edition*, as the "marked by inactivity or repose: tranquilly at rest." Thus, the secondary controller takes over after the primary controller is marked by inactivity, e.g., is no longer running. The Examiner's reference to how the primary

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controller "gracefully shuts down" does not contradict that the secondary controller takes over after the primary controller has shut down. The gracefully shut down is the process that the primary controller takes to before the secondary controller takes over.

The Office Action continues to say that at a particular stage that, e.g. CommitTakeover, only one version is running. Applicant traverses the argument that at the CommitTakeover process discloses the present invention. During the CommitTakeover process described by Holte-Rost both the new and old software is running at the same time. Figure 5 of Holte-Rost shows the CommitTakeover process, and Phase 2-4 illustrates how both the old and new versions of software are operating simultaneously. This is also clear from Column 8, lines 29-53. Moreover, Holte-Rost is replete with examples of when the new and old software versions are running at the same time, especially during testing of the new software. On the other hand, the present invention of claims 1, 11 and 14 are directed so that two versions are not running at the same time.

In view of the foregoing, it is respectfully submitted that Holte-Rost does not disclose, teach or otherwise suggest the invention claimed in independent claims 1, 11 and 14. As claims 4-5 and 12-13 depend upon and include each and every limitation of claims 1 and 11, it is respectfully submitted that Holte-Rost also do not render the dependent claims obvious. It is therefore respectfully requested, with respect to claims 1, 4-5, and 11-14 that the rejection under Section 103(a) be withdrawn.

With respect to claims to claims 6 and 15, Applicants continues to respectfully traverse the interpretation of the present claims and the scope of Holte-Rost. Claims 6 and 15 are directed to a downgrading a software version of a wireless communication system or a broader system. In the present invention, the primary controller controls the operation of the system and the second controller is used for backup in the event that something prevents the first controller from operating. One of the elements of concern in transfer from the first controller to the second controller is the transfer of state data, which indicates the steady state, from the first controller to the second controller. This concern is augmented in the context of software downgrades when the software versions on the first controller and the second controller are not the same and where software is not downwardly compatible, i.e. the state data from a new version of software cannot run

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on an old version of software. In order to overcome this concern, claims 6 and 15 each include a converting step that converts the state data saved in a first format corresponding to the state data for running the first version of software to state data in a second format corresponding the state data needed for running the second version of software. As state in the Specification for a system downgrade, the conversion of the state data is to an older version of the state data. See Page 10, lines 14-18.

Holte-Rost do not disclose the conversion of the state data for a downgrade. Instead, Holte-Rost discloses only that resources are saved for use by the new version and the old version where the new version is an upgrade. This is consistent with the Examiner's response to Applicants' arguments as to why Holte-Rost does not disclose the present invention. The new version discussed in Holte-Rost is for new *upgraded* software. Nowhere in Holte-Rost is there a discussion of how to downgrade the software to an earlier version of the software. As discussed in the present application and as seen in the claims, downgrading to an older version is not the same as upgrading software because some of the data from state data from the new version of software will not be acceptable to the downgraded version of software. In fact, Holte-Rost teaches away from a conversion when it discusses the cancellation, or abortion, of a software conversion. Holte-Rost states, "A reversion, by applying the signal CommitTakeover to the old static processes, is possible but the states in the new static processes that have been changed during the time between the Takeover signal and the CommitTakeover signal will be lost." Holte-Rost, column 8, lines 58-63. In other words, the state data transferred by Holte-Rost in a downgrade is the state data from the new version of software that cannot be used by the downgraded second version. Thus, the new versions that are downwardly compatible will be discarded. If the state data could be used by the downgraded second version then signals would not be lost. This does not create network stability as is required by claims 6 and 15.

Moreover, Applicants disagree that downgrading software from a one version to an earlier version is equivalent to upgrading. The concerns are different and the order in which the steps are to be performed are different. In particular, the primary concern is that software is not always backward compatible so that not all the data, such as state data, used and created with the new software does not necessarily run on the earlier

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version of software. The present invention overcomes this issue by converting the state data. Holte-Rost does not overcome this problem because it does not convert saved state data.

In view of the foregoing, Applicants respectfully submit that Holte-Rost do not disclose, teach or otherwise suggest the conversion of state data during the downgrade of software in a system. In therefore respectfully requested that the rejection under Section 103(a) be withdrawn. As claims 9-10 depend upon independent claim 6 and include each and every limitation of that claim, including the converting step, it is respectfully submitted that these claims are not obvious in view of Holte-Rost. It is therefore respectfully requested that the rejection under Section 103(a) be withdrawn.

In the Office Action, claims 2, 3, 7 and 8 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Holte-Rost in view of United States Patent No. 5,666,293 to Metz et al. Assuming that Metz does disclose the use of a control table including software version, Metz does not disclose the quiescing of primary processor before running the updated second version of software as required by claims 2 and 3. In addition, Metz does not disclose the converting of state data as required by claims 7 and 8. For the reasons given above with respect to independent claims 1 and 6 upon which claims 2, 3, 7 and 8 depend, Applicants respectfully submit that these rejected claims are patentable over Holte-Rost in view of Metz. Applicant therefore respectfully request that this rejection under Section 103(a) be withdrawn.

As the Applicant has overcome all substantive rejections and objections given by the Examiner and have complied with all requests properly presented by the Examiner, the Applicant contends that this Amendment, with the above discussion, overcomes the Examiner's objections to and rejections of the pending claims. Therefore, the Applicant respectfully solicits allowance of the application. If the Examiner is of the opinion that any issues regarding the status of the claims remain after this response, the Examiner is invited to contact the undersigned representative to expedite resolution of the matter.

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Please charge any fees associated herewith, including extension of time fees, to
50-2117.

Respectfully submitted,
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